

DEFENSE ACQUISITION UNIVERSITY
BUSINESS, COST ESTIMATING, & FINANCIAL MANAGEMENT DEPARTMENT

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TEACHING NOTE

ANALYSIS OF ALTERNATIVES
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INTRODUCTION

An *Analysis of Alternatives (AoA)* is a study of the operational effectiveness and life-cycle costs of the various alternatives that may be able to meet a mission area need. It answers the question, “What is the most cost-effective way to meet this mission need?” According to DoD 5000.2-R, the analysis is intended to:

- *Aid and document decision-making by showing the risk, uncertainty, and relative advantages and disadvantages* of the considered alternatives. It *aids in the discussion of issues*. The analysis should show the sensitivity of each alternative to possible changes in key assumptions (e.g., threat) or system variables (e.g., selected performance capabilities). Where appropriate, it should include discussion of interoperability and commonality of components/systems that are functionally similar to other DoD programs or Allied programs. The analysis shall aid decision-makers in judging whether or not any of the proposed alternatives offer sufficient military and/or economic benefit to be worth the cost. There should be a clear linkage between the analysis of alternatives, system requirements and measures of effectiveness used to evaluate the system.
- *Foster joint ownership and afford a better understanding of subsequent decisions* by early identification and discussion of reasonable alternatives among decision-makers and staffs at all levels. The analysis should be quantitatively based, producing discussion on key assumptions and variables.

The AoA will normally include the following key sections:

- Mission Need, Deficiencies and Opportunities
- Threats
- Operational Environments
- Operational Concept
- Alternatives
- Measures of Effectiveness
- Life-Cycle Costs of each alternative
- Analysis of Alternatives (i.e., the actual analysis)

PREPARATION RESPONSIBILITIES

DoD 5000.2-R establishes the basis for developing an AoA to support milestone and decision reviews. These policies and procedures specifically apply to acquisition category (ACAT) I programs and ACAT IA programs. Component Acquisition Executives (CAEs) may tailor the underlying principles as needed for ACAT II and III programs.

The DoD Component responsible for the mission area in which a deficiency or opportunity has been identified normally prepares the AoA for ACAT I weapon systems. The OSD Principal Staff Assistant (PSA) office responsible for the functional area to be impacted normally prepares the AoA for ACAT IA automated information system programs. The Component Head or PSA is responsible for determining the independent activity which will perform the analysis. DoD 5000.2-R specifically prohibits delegation of this responsibility to the Program Manager.

For ACAT ID and ACAT IAM programs (where the milestone decision is made at the DoD-level), DoD 5000.2-R requires the Component Head or PSA (as applicable) to coordinate with key OSD officials and staffs early in the AoA process. This coordination is required to increase the likelihood that a full range of alternatives is considered; that organizational and operational plans for the alternatives are consistent with U.S. military strategy; and that joint-service issues such as interoperability, security, and common use are addressed in the AoA. This includes the staffs of USD(AT&L), the Assistant Secretary of Defense (Command, Control, Communications and Intelligence) (ASD(C³I)), the Joint Staff, the OSD PSA, the Director for Operational Test and Evaluation (DOT&E), and the Director, Program Analysis & Evaluation (PA&E), as applicable. The Director, PA&E is responsible for preparing guidance for the AoA in coordination with these offices, to be issued by USD(AT&L) or ASD(C³I).

REVIEWS OF AoAs

Per DoD Instruction 5000.2, AoAs for both ACAT I and ACAT IA systems are required to be prepared and considered at Milestone B (Milestone I for grandfathered programs)¹ or Milestone C if there is no Milestone B. The Milestone Decision Authority (MDA) may direct updates to the analysis for subsequent milestone reviews, if conditions warrant. DoD 5000.2 R has the prescriptive guidance for ACAT I and ACAT IA that may also be used for nonmajor programs. The CAE has the authority to decide on the need for, and extent of, AoAs for programs classified as other than ACAT I or ACAT IA. Detailed guidance from D, PA&E for conduct of the AoA for an ACAT ID program is normally an attachment to the Milestone A ADM.

¹ This teaching note refers to the defense acquisition process defined in the 5 Apr 02 versions of DoD Directive 5000.1, DoD Instruction 5000.2, and DoD 5000.2-R. "Grandfathered" programs are those programs that continue to operate under the process described in the 1996 versions of DoDD 5000.1 and DoD 5000.2-R. Not incorporated are expected changes to DoD Directive 5000.1 and DoD Instruction 5000.2 currently in draft form. It is expected that DoD 5000.2-R will be cancelled and probably rewritten as a guidance manual.

ACAT I programs: At program initiation, the analysis focuses on broad trade-offs available between a large range of different concepts. The analysis normally presents a “Go / No Go” recommendation. It demonstrates whether a new system is better than upgrading/modifying an existing system. Cost estimates may be only a rough order of magnitude. At subsequent milestone reviews, if the AoA is required to be updated, the analysis would be more focused. Hardware alternatives present a narrower range of choices. The analysis is more detailed than previously as the system is better defined and more cost data are available. Point estimates are given with uncertainty ranges. At production commitment (Milestone III for grandfathered programs) the AoA is unlikely to be required, unless the program or circumstances (e.g., threat, alliances, operating areas, technology, etc.) have changed significantly.

- ACAT IA programs: The AoA for an ACAT IA program will be incorporated into the cost-benefit element structure and process agreed upon by that program’s IPT. At program initiation, the Component may conduct a sufficiency review of the PM’s life-cycle cost estimate and life-cycle benefits in lieu of a full analysis. Normally, the IPT will establish the content for the sufficiency review. The AoA is usually updated at subsequent milestone reviews in conjunction with the program’s life-cycle cost-benefit analysis update.

SERVICE PREPARATION PROCESSES

Each Service conducts the AoA preparation process in a unique fashion:

Navy: The Office of the Assistant Secretary of the Navy (Research, Development and Acquisition) (ASN(RDA)) released guidance on the preparation of AoAs. An AoA proposal prepared by ASN(RDA) in coordination with the program sponsor, program manager (PM) and appropriate System Command/Program Executive Office will initiate the AoA for ACAT I programs. An appointed oversight board will frame issues for ASN(RDA) and OP-08/DCS(RP) decision when consensus cannot be readily obtained. A study team prepares the AoA. The PM will be represented on the study team and the oversight board. Funding for AoAs will be separately identified through the PM with funding from resource sponsors. The PM will provide information and support as necessary to the study team.

Air Force: The Department of the Air Force published two documents to provide guidance for conducting an AoA, AFRD 10-6 and AFI 10-601. The lead MAJCOM for a new system will identify, explore and evaluate potential alternative solutions by accomplishing an AoA.

Army: In the Department of the Army, the Training and Doctrine Command (TRADOC) and the user community bear the responsibility for preparation of the AoA. The PM is a contributor of information and participates in the preparation process. AR 71-9 and the Army Acquisition Handbook provide information on AoA preparation.

SUMMARY

DoD Regulation 5000.2-R establishes the requirement for an *Analysis of Alternatives (AoA)*, specifically for ACAT I and ACAT IA programs. The AoA is a study of the operational effectiveness and life-cycle costs of the proposed alternatives to meet a mission need. The AoA is required at appropriate milestone reviews, beginning with program initiation, and shows the risk, uncertainty, and relative advantages and disadvantages of the considered alternatives.